



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,705	01/22/2002	Kazuhiko Higashi	Q68150	6333

23373 7590 10/25/2006
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

JARRETT, RYAN A

ART UNIT PAPER NUMBER

2125

DATE MAILED: 10/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/031,705

Applicant(s)

HIGASHI, KAZUHIKO

Examiner

Ryan A. Jarrett

Art Unit

2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-30 is/are pending in the application.
- 4a) Of the above claim(s) 14-16 and 21-30 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17 is/are allowed.
- 6) ☒ Claim(s) 13 and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 August 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 25-30 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Claims 25-30 do not share the same special technical features as that of elected claims 18-20.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 25-30 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Priority

2. This application is a 371 National Stage entry of PCT/JP00/03243, filed 05/22/2000.

Drawings

3. The drawings were received on 08/25/2006. These drawings are acceptable with respect to Figs. 18, 19, 21, 22, and 23, but they are not respectable with respect to Figs. 20 and 24.

4. It appears that Figures 20 and 24 should be designated by a legend such as -- Prior Art-- because it appears that only that which is old is illustrated, per Applicant's description of these figures on pages 1-14 of the specification. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are further objected to because:

-In Fig. 24, it appears that "THROUGHT" should be changed to "THROUGH".

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 13 and 18-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims are generally directed to an abstract idea (§101 judicial exception). For claims including such excluded subject matter to be eligible, the claim must be for a practical application of the abstract idea. Diehr, 450 U.S. at 187, 209 USPQ at 8; Benson, 409 U.S. at 71, 175 USPQ at 676.

To satisfy section 101 requirements, the claim must be for a practical application of the §101 judicial exception, which can be identified in various ways: (1) The claimed invention "transforms" an article or physical object to a different state or thing, or (2) The claimed invention otherwise produces a useful, concrete and tangible result.

Practical Application by Physical Transformation

In the present case, claims 13 and 18-20 do not "transform" an article or physical object to a different state or thing.

Practical Application That Produces a Useful, Concrete, and Tangible Result

For eligibility analysis, physical transformation "is not an invariable requirement, but merely one example of how a mathematical algorithm [or law of nature] may bring about a useful application." AT&T, 172 F.3d at 1358-59, 50 USPQ2d at 1452. In determining whether the claim is for a "practical application", the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed invention is "useful, tangible and concrete".

"TANGIBLE RESULT"

The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different thing. However, the tangible requirement does require that the claim must recite more than a §101 judicial exception, in that the process claim must set forth a practical application of that §101 judicial exception to produce a real-world result. Benson, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had "no substantial practical application"). "[A]n application of a law of nature or mathematical formula to a ... process may well be deserving of patent protection." Diehr, 450 U.S. at 187, 209 USPQ at 8 (emphasis added); see also Corning, 56 U.S. (15 How.) at 268, 14 L.Ed. 683 ("It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted..."). In other words, the opposite meaning of "tangible" is "abstract".

Although “system” claims 13, 18, and 19 recite tangible items such as a “communication cable”, a “servo amplifier”, and a “spindle amplifier”, the tangible system merely functions to implement abstract ideas. For example, the final result of claim 13 is “a communication cycle...is split into a plurality of sub cycles”. The final result of claim 18 is “calculates the time”. And the final result of claim 19 is “calculates a transmission timing”. These final results fail to produce any tangible real-world result. The Office deems (as evidenced by the prior art and Applicant’s own admission) that the arrangement of hardware in system claims 13, 18, and 19 is not what the Applicant has invented and is seeking to patent, i.e., Applicant is relying on the programmed functionality of the hardware for patentability, and that programmed functionality is an abstract idea rather than a practical application.

Where the final result is what has been determined, calculated, selected, decided, etc. without using what has been determined, calculated, selected, decided, etc. in a disclosed practical application or at least making what has been determined, calculated, selected, decided, etc. available for use through some form of conveyance (for example display, print, sound, transmission, etc.) or at least temporary storage somewhere, then a tangible result has not been achieved.

Claim 20 depends from claim 19 and incorporates the same deficiency. However, claim 20 otherwise produces a tangible final result. The “retains the node count and transmission timing...in order to perform communications between peripheral devices” is deemed to be a tangible final result.

Likewise, the “retaining the number of connections and transmission timing” of method claim 17 is deemed to be a tangible final result.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 18-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18 recites the limitation “the peripheral devices, when a synchronization frame transmitted downstream from the numerical control apparatus is received in initial communications, output a synchronization signal and calculate the time required for a respective peripheral device as the most downstream node to receive the synchronization frame”. It is unclear if the “respective peripheral device as the most downstream node” is referring to the same “peripheral device(s)” that received the synchronization frame in initial communications or if it is referring to a different peripheral device. It would appear from the language of the claim that the two are different. However, Applicant’s comments on page 18 of the Arguments filed 08/25/2006 seem to indicate that the two might be the same.

On page 18 of the Arguments, Applicant states, “Each peripheral device outputs the synchronization signal and calculates the time as if it was the most downstream node.” This statement further renders the claim indefinite, since Applicant is effectively

Art Unit: 2125

saying that there can be more than one "the most downstream node", or that multiple peripheral devices can act as "the most downstream node". However, the claim language does not support this interpretation. The recitation "the most downstream node" necessarily requires a single downstream node, not multiple virtual downstream nodes, as argues by the Applicant. Clarification is required.

Claims 19 and 20 depend on claim 18 and incorporate the same deficiencies.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

-A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Yamashita et al. US 5,822,615.

Yamashita et al. discloses:

13. **A numerical control system comprising:**

a numerical control apparatus (e.g., Fig. 31 #1: "BASIC SYSTEM OF THE NC UNIT");

a communication cable including a data transmission cable for data transmission (e.g., Fig. 31 #121, col. 1 lines 44-52, Fig. 2, Fig. 20) **and a data transmission cable for data reception** (e.g., Fig. 31 #122, col. 1 lines 44-52, Fig. 2, Fig. 20); **and**

a plurality of peripheral devices including at least one of a servo amplifier, a spindle amplifier and a remote I/O unit (e.g., Fig. 31 #2: "REMOTE.IO") the peripheral devices serially connected with the numerical control apparatus through the communication cable in order to perform time-division-based communications between the numerical control apparatus and the peripheral devices (e.g., col. 5 line 11: "time division", col. 19 line 45: "time division", col. 24 line 32: "time division", EN: *This is an intended use of the cable, not positively recited as a functional limitation of the system.*),

wherein a communication cycle (e.g., Fig. 9: "ONE CYCLE INTERVAL", Fig. 18: "CYCLE TIME") in the communications between the numerical control apparatus and the peripheral devices is split into a plurality of sub cycles (e.g., Fig. 9: "N#0-N#9", Fig. 18: "NC-RIO TRANSMISSION FRAME") to process data (e.g., Fig. 9: "DATA#0-DATA#3") to be processed in the communication cycle in the split plurality of sub cycles.

Response to Arguments

12. Applicant's arguments, see pages 15-16, filed 08/25/2006, with respect to the drawing objections have been fully considered and are mostly persuasive. Some of the drawings objections have been withdrawn in light of the replacement drawings. However, there appears to have been a problem in the preparation or submission of Figs. 20 and 24. As such, outstanding objections to these figures remain.

13. Applicant's arguments, see page 16, filed 08/25/2006, with respect to the specification objections have been fully considered and are persuasive. The

specification objections have been withdrawn in light of the amendment filed 08/25/2006.

14. Applicant's arguments, see page 17, filed 08/25/2006, with respect to the claim objections have been fully considered and are persuasive. The claim objections have been withdrawn in light of the amendment filed 08/25/2006.

15. Applicant's arguments, see pages 17-18, filed 08/25/2006, with respect to the 35 U.S.C. 101 rejections of claims 13 and 18-20 have been fully considered but they are not persuasive. As a first point, the usefulness and concreteness of the claimed invention have not been called into question, it is only the tangible result requirement that has been called into question. Secondly, Applicant arguments on pages 17-18 are not relevant since they point to certain sections of the specification and to certain features that are not claimed. Where the final result is what has been determined, calculated, selected, decided, etc. without using what has been determined, calculated, selected, decided, etc. in a disclosed practical application or at least making what has been determined, calculated, selected, decided, etc. available for use through some form of conveyance (for example display, print, sound, transmission, etc.) or at least temporary storage somewhere, then a tangible result has not been achieved.

16. Applicant's arguments, see page 18, filed 08/25/2006, with respect to the rejection of claims 18-20 under 35 U.S.C. 112 2nd paragraph have been fully

considered. Some of the prior rejections of claims 18-20 under 35 U.S.C. 112 2nd paragraph have been withdrawn in light of the amendment filed 08/25/2006. However, certain rejections still remain. On page 18 of the Arguments, Applicant states, "Each peripheral device outputs the synchronization signal and calculates the time as if it was the most downstream node." This statement further renders the claim indefinite, since Applicant is effectively saying that there can be more than one "the most downstream node", or that multiple peripheral devices can act as "the most downstream node". However, the claim language does not support this interpretation. The recitation "the most downstream node" necessarily requires a single downstream node. It does not allow for multiple virtual downstream nodes, as argues by the Applicant. Clarification is required.

17. Applicant's arguments, see pages 19-20, filed 08/25/2006, with respect to the rejection of claim 13 under 35 U.S.C. 102(b) as being anticipated by Yamashita et al. US 5,822,615 have been fully considered but are not persuasive.

Applicant's arguments on page 20 lines 3-8 are moot since they are directed to features that currently carry no patentable weight as they are directed to an intended use of the cable, not positively recited as a functional limitation of the system by way of software routines performing said functions.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "Yamashita does not disclose or suggest a system that would have dedicated and

Art Unit: 2125

unidirectional lines and would also time multiplex the data") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Allowable Subject Matter

18. Claim 17 is allowed.

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2125

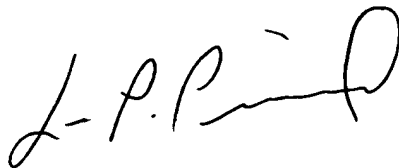
20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan A. Jarrett whose telephone number is (571) 272-3742. The examiner can normally be reached on 10:00-6:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ryan A. Jarrett
Examiner
Art Unit 2125

10/19/06
RAJ



LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100